

42. (New) A method as in claim 19, wherein the hardwired link is part of a contention network.

43. (New) A method as in claim 19, wherein peer-to-peer connectivity is supported between servers coupled to the network and computers coupled to the remote transceivers.

44. (New) A method as in claim 19 further comprising:
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at the base station, receiving aggregated data flow information transmitted over the subscription-based wireless link; and
processing the aggregated data flow information into data messages; and
routing the data messages through the network.

45. (New) A method as in claim 1, wherein a combination of the hub and subscriber unit is portable.

REMARKS

Previously, claims 1-37 were pending in the present application. Claims 38-45 are being added by way of this amendment. Consequently, claims 1-45 will be pending after entry of this Amendment.

Applicants have amended claims 1 and 19 to expedite prosecution of the present application. The submission of these amendments should not be interpreted as acquiescing to the Examiner's rejection.

The following remarks address the rejections of claims 1-37 as set out by Examiner in this Office Action and patentability of new claims 38-45.

Formal drawings are being submitted with this reply.

Summary

One aspect of the present invention is directed towards a method of supporting communication between multiple remote transceiver devices and a network. Each of multiple logical connections between the remote transceivers and the network includes multiple wireless

links. More specifically, data flows can be supported between multiple remote transceivers and a hub over a first wireless link. The hub, in turn, can be coupled to a wireless transceiver device, such as an access unit, via a hard-wired link. The wireless transceiver device coupled to the hub device can further support data flows over a second wireless link to a base station that is itself coupled to a network. Consequently, each of multiple remote transceivers can establish individual logical connections over a two-tiered wireless communication system. In one application, logical computer-to-computer connections are supported by a transport protocol.

This method of communicating is advantageous because it enables multiple remote users to communicate with a target network through a common hub, that itself is potentially mobile. For example, the hub and wireless transceiver device can be a mobile system supporting wireless data flows between multiple remote transceivers and a base station. In this instance, not only can the remote transceivers be portable devices, the hub itself can be portable relative to both the base station and remote users.

In another application, the second wireless link is a subscription-based unit in which resources are allocated on an as-needed basis to support variable communication rates. This aspect of the invention is particularly advantageous in applications where multiple remote users sharing a common link desire short term, high speed wireless access to the network device through a base station. Based on this inventive configuration, resources of the second wireless link can be allocated as needed to support data flows for transmitting or receiving data information over a corresponding logical connection. One instance in which this aspect of the invention is beneficial is a case when a remote terminal is connected to the Internet and the remote unit demands short bursts of high speed data throughput.

Cited References

Pasanen (WO 99/22493) discloses a system in which multiple peripheral devices are coupled to a local area network. A server is coupled to the network to support communication among the peripheral devices.

Tehro, *et al.*, (EP 0 663 785 A2) discloses a method of transferring data over a radio telephone network and mobile station.

Rejections of Claims 1-18 under 35 U.S.C. § 103(a)

The Examiner has rejected claim 1 under 35 U.S.C. § 103(a) based on the teachings of Pasanen (WO 99/22493) in view of Tehro, *et al.*, (EP 0 663 785 A2).

Applicants have reviewed the cited references and have amended claim 1 to expedite prosecution of the present application. For example, claim 1 now recites that simultaneous data flows associated with multiple private links are aggregated for transmission over a shared, subscription-based wireless communication link. Based on this technique, multiple users can privately communicate over a shared, subscription-based wireless communication system. Support for the amendment can be found in Figs. 1, 3-5, text at page 4, lines 4-13, page 4, lines 15-24, page 5, lines 4-13, page 5, lines 24-28, page 12, lines 16-26, page 26 lines 1-11, page 14, lines 22-27, and elsewhere throughout the specification.

It is well accepted that for a claim to be rendered obvious, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *In re Vaeck*, 947 F.2d 488, 20USPQ2d 1438 (Fed.Cir. 1991).

According to amended claim 1, multiple private, simultaneous data flows to/from wireless remote transceivers can be transmitted over a shared, subscription-based wireless link to communicate over a network. None of the cited references teaches or suggests these aspects of the invention nor do they teach its advantages over the prior art. Moreover, the cited references do not disclose a system or method for aggregating data flows from multiple remote transceivers and transmitting the aggregated information of the data flows over a shared, subscription-based wireless link. Thus, it is respectfully submitted that the invention as recited in the amended claims includes a limitation not taught or disclosed by any of the references.

More specifically, Pasanen discloses a system in which multiple “peripheral” devices of a computer system communicate with each other over a wireless Local Area Network. A “peripheral” device is a device connected to a computer and is controlled by the computer’s microprocessor. Examples of peripheral devices include disk drives, printers, and joysticks.

Pasanen, therefore, does not appreciate the technical hurdle solved by claim 1, which is simultaneously supporting multiple individual private communication links between remote transceivers and a network. Instead, Pasanen discloses a system in which many peripheral devices of a single user’s work station (specifically peripheral devices 6-15) can communicate

with each other over a wireless Local Area Network (LAN). At page 1 line 11-15, Pasanen discloses that information can be passed between “the mobile station and a device connected to the local area network.” (emphasis added). Thus, Pasanen discloses wireless support for only a single peripheral device at a time and does not anticipate supporting multiple simultaneous, individual data flows. Nor does Pasanen teach or suggest aggregating data flows of multiple private links for transmission over a subscription-based wireless link.

The Examiner concedes that Pasanen does not teach or suggest that the base station is coupled to a network via a subscription-based link. For this aspect of the invention, several textual passages in Tehro have been cited as well as Fig. 3. Specifically, the Examiner states that Tehro teaches a use of a base station in communication with a network so that a LAN can communicate with the network.

It is respectfully submitted that Tehro also does not address the technical hurdles overcome by the present invention in claim 1. For example, Tehro illustrates in Fig. 1 that a single computer can be connected to a network via a wireless connection provided by a mobile phone.

In contradistinction, the present invention as in claim 1 recites establishing multiple individual wireless short-range private wireless communication links. Additionally, claim 1 recites that data flows from the multiple individual wireless links are aggregated for transmission over a subscription-based wireless link. Tehro (Fig. 1) does not disclose aggregating data flows from multiple private links because, as shown, a single transceiver (mobile phone 10) supports only one private data flow from computer 12.

The Examiner has also cited Fig. 3 in Tehro to reject the claimed invention. As shown, a Local Area Network 1 is coupled to a mobile phone 15 to transmit over a wireless link to base station BTS4 & BSC. It is respectfully submitted that this aspect of Tehro also does not teach the claimed invention.

First, Tehro does not disclose the use of a wireless LAN. Note that the “squiggle” between BTSC and mobile phone 15 identifies a wireless link. However, there is no “squiggle” in Fig. 1 associated with LAN 1 and LAN-controller 14 to identify another wireless link. Thus, Tehro does not disclose the use of a wireless LAN device, nor does he appreciate the technical hurdle associated with using same.

Note also that Fig. 3 nor its related text discloses a use of multiple short-range private wireless links as in the claimed invention. This further distinguishes Tehro the claimed invention over Tehro.

Assume, arguendo, that LAN 1 were a wireless device. Tehro still would not teach or suggest supporting multiple private simultaneous links as in claim 1. Similar to Pasanen, Tehro thus does not teach or suggest the technique of aggregating data flows for multiple private links and transmitting the data information over a shared, subscription-based wireless communication link. Consequently, Pasanen and Tehro, individually or combined, do not teach the claimed invention.

The invention as in claim 1 is both novel and advantageous over the prior art. For example, in contradistinction to the cited references, the claimed invention can support multiple simultaneous connections for a plurality of users that share use of a subscription-based wireless link. Overall costs such as fees associated with the subscription-based link can be shared among multiple users so that the cost of use for each user is thus reduced.

Additionally, the claimed invention is advantageous over the prior art because it is not necessary to maintain an individual subscription-based wireless link for each of multiple users. More specifically, instead of maintaining multiple individual subscription-based links for each user, a shared subscription-based link can be used by many users. Consequently, the excess overhead of wireless resources associated with maintaining multiple links can be reduced and wireless resources can be used more efficiently by many users.

As mentioned in Applicants specification, the claimed invention can be deployed at large multi-corporate meetings where meeting participants use laptop computers to acquire access to either the Internet or their own remotely located network and data bases. For example, each individual in a group of corporate representatives attending an off-site meeting can be provided their own private computer network connection by locating a hub, as in claim 1, in the vicinity of the users to support the multiple private short-range links. Over the multi-tiered wireless system of the claimed invention, representatives can simultaneously access secure (private) data information such as e-mails even though the subscription-based link is shared. In this way, business executives can access limitless information at the remote location without each having to pay a fee for a separate subscription-based link.

It is submitted in view of the above amendment and remarks that claim 1 is novel and non-obvious as it incorporates advantageous techniques contrary to previously accepted wisdom and blueprints for the inventive apparatus can not be found in the individual or combined cited references. Accordingly, it is submitted that independent claim 1 is in condition for allowance over the prior art. Further examination and reconsideration of the rejection of claim 1 and corresponding dependent claims 2-18 and new claims 38-41 is respectfully requested.

Patentability of New Claims 38-41

Newly submitted claim 38 further distinguishes the claimed invention over the prior art because it includes the limitation that the at least one-hardwired communication link is part of a contention network. Consequently, the remote transceivers can compete to transmit data flow information over the hardwire link. Support for this aspect of the invention can be found in Fig. 1, text at page 14, lines 22-27, and elsewhere throughout the specification.

None of the cited references address the technical hurdle of allowing multiple users to share the hardwire link for contention-based communications. Thus, it is respectfully submitted that claim 38 is neither anticipated nor is it obvious in light of the prior art. Consideration and allowance of the claim is also respectfully requested.

Newly submitted claim 39 further distinguishes the claimed invention over the prior art because it includes the limitation that peer-to-peer connectivity is supported by the communication system. For example, each of multiple users can be afforded a private link between a given remote transceiver and a processing device such as a server coupled to the network. Support for this aspect of the invention can be found in Fig. 1, text at page 4, lines 1-13, page 26, lines 1-11, and elsewhere throughout the specification.

None of the cited references address the technical hurdle of supporting multiple private peer-to-peer connections between users and corresponding processing devices of a network, while sharing a subscription-based wireless link. Thus, it is respectfully submitted that claim 39 is neither anticipated nor is it obvious in light of the prior art. Consideration and allowance of this claim is also respectfully requested.

Newly submitted claim 40 further distinguishes the claimed invention over the prior art because it includes the limitation that data flows include data messages that are routed through

the network. Support for this aspect of the invention can be found in Fig. 1, text at page 10, lines 18-27, and elsewhere throughout the specification.

The cited references do not address the technical hurdle of allowing multiple users to share use of the wireless resources as recited by claim 40. For example, data flows can include data messages routed based on a transport protocol such as TCP/IP. It is respectfully submitted that claim 40 is neither anticipated nor obvious in light of the prior art. Consideration and allowance of the claim is also respectfully requested.

Newly submitted claim 41 further distinguishes the claimed invention over the prior art because it includes the limitation that a combination of the hub and access unit is portable. Support for this aspect of the invention can be found in Fig. 1, text at page 4 line 24 to page 5 line 13, and elsewhere throughout the specification.

The cited references do not address the technical hurdle of providing wireless support to multiple users in a region that share use of a longer range subscription-based link. Portability of the combined hub and access unit renders it possible to support temporary communication in any chosen region. Thus, it is respectfully submitted that claim 41 is neither anticipated nor obvious in light of the prior art. Consideration and allowance of the claim is also respectfully requested.

Rejections of Claims 19-37 under 35 U.S.C. § 103(a)

The Examiner has also rejected claim 19 under 35 U.S.C. § 103(a) based on the teachings of Pasanen (WO 99/22493) in view of Tehro, *et al.*, (EP 0 663 785 A2).

Applicants have reviewed the cited references and have amended claim 19 to expedite prosecution of the present application. More specifically, claim 19 now recites certain distinguishing limitations as found in claim 1. For example, data messages are aggregated from multiple individual logical data flows for transmission over a shared radio channel. Based on this technique, each of multiple users utilizing a first wireless link can privately communicate over a shared wireless communication link. Support for the amendment of claim 19 and patentability is discussed above. Allowance of claim 19 and corresponding dependent claims 20-37 and 42-45 is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned Attorney at (978) 341-0036.

Respectfully submitted,

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MARKED UP VERSION OF AMENDMENTSClaim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

1. (Amended) A method for communication of data between a plurality of remote transceivers and a network based on data flows over multiple types of communication links disposed therebetween, the method comprising the steps of:

establishing [a] multiple simultaneous, individual private short-range wireless communication [link] links between the plurality of remote transceivers and a hub, the hub maintaining a data flow [flows] for each remote transceiver;

providing at least one hardwired communication link over which data flows are established between the hub and an access unit; and

at the access unit, supporting an aggregation of the data flows over a subscription-based wireless communication link between the access unit and a base station, [wherein] the base station being [is] in communication with the network.

23 10.

(Amended) A method for communication of data between a plurality of remote transceivers and a network based on data flows over multiple types of communication links disposed therebetween, the method comprising the steps of:

establishing a first set of wireless communication links between the plurality of remote transceivers and a hub for transmission of data messages from terminal equipment coupled to the plurality of remote transceivers;

transmitting the data messages from at least one of the plurality of remote transceivers to the hub;

receiving the data messages at the hub;

routing data messages received by the hub over a hardwired link to a subscriber unit; [and]

aggregating data messages from multiple individual logical data flows generated by computers coupled to the plurality of remote transceivers;

establishing a second wireless communication link between the subscriber unit and base station using multiple shared radio channels, whereby the aggregated data messages from multiple logical data flows [transmitted on second wireless link] are reformatted to include an extra physical layer for transmission of data on said second wireless communication link;

stripping the extra physical layer from the data messages received over the second wireless communication link at the base station and reconstructing data messages to an original form; and

routing the data messages in the original form to a network in communication with the base station.